Ultrasound following Medical Abortion

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Background

• Early Medical Abortion (MA)
  – Less than 63 days gestational age
  – Using mifepristone and misoprostol generally
    • Data should apply to misoprostol-only MA
• Return in 7-14 days for follow-up evaluation
  – Often includes transvaginal ultrasound
3 clinical questions after medical abortion

• Has the pregnancy been expelled?
• Is the woman’s bleeding in the normal range and generally decreasing?
• Is she feeling well and not in pain, with resolving symptoms of pregnancy?

Only the first question should be and can be determined by ultrasound.
Ultrasound Uses After MA

• Confirm absence of gestational sac
  – Expelling the pregnancy is the goal of MA
  – Previously visualized of sono before MA
  – Confirms absence of continuing pregnancy

• Not to confirm a “complete” abortion
  – The uterus is rarely “empty”
  – Residual clot & decidua remain
  – Often includes villi
  – Highly variable appearance
Endometrium after medical abortion: Wide variation
Ongoing pregnancy <1% after medical abortion

(+) cardiac activity
Research Questions

• What sonographic findings predict the need for intervention (uterine evacuation)?

• Is endometrial thickness a useful predictor of the need for intervention (uterine evacuation)?
Endometrial Thickness

• The maximal thickness of the endometrium
  – Including everything within
  – In the sagittal plane
  – Anterior-posterior dimension

• Used to assess for endometrial cancer
  – A good diagnostic test for endometrial abnormalities in post-menopausal women
    (Smith-Bindman, JAMA, 1998)
EMT for post-menopausal women: ROC Curves
EMT after Medical Abortion

- Endometrial Thickness (EMT) after spontaneous or medical abortion
  - Poorly studied
  - Arbitrary cutoffs used to define abnormal
    - 10mm
    - 15mm
    - 20mm
- EMT not routinely checked after surgical abortion but similar cut-offs frequently used
Typical ultrasound after medical abortion
Endometrial Thickness after Medical Abortion

• A pooled analysis of 2208 women undergoing medical abortion at less than 63 days,
  – 2 prospective randomized trials
  – Very good follow-up

• Both trial used 200 mg mifepristone followed by 800 mcg misoprostol vaginally

Reeves, Fox, Lohr, Creinin. Ultrasound Obstet Gynecol 2009
EMT at 7 days after misoprostol

Difference 3.5 mm [95% CI 1.8, 5.3]
Endometrial thickness as a predictor of surgical intervention

Area under curve = 0.6497  se(area) = 0.0543
## Day 7 Results by EMT Threshold

<table>
<thead>
<tr>
<th>EMT (mm)</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
<th>ROC area</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>73.3%</td>
<td>42.2%</td>
<td>2.0%</td>
<td>99.0%</td>
<td>0.58</td>
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<tr>
<td>15</td>
<td>40.0%</td>
<td>78.1%</td>
<td>2.9%</td>
<td>98.8%</td>
<td>0.59</td>
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<tr>
<td>20</td>
<td>23.3%</td>
<td>94.7%</td>
<td>6.7%</td>
<td>98.7%</td>
<td>0.59</td>
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<tr>
<td>25</td>
<td>10.0%</td>
<td>98.8%</td>
<td>11.5%</td>
<td>98.5%</td>
<td>0.54</td>
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<tr>
<td>30</td>
<td>3.3%</td>
<td>99.8%</td>
<td>25.0%</td>
<td>98.4%</td>
<td>0.52</td>
</tr>
</tbody>
</table>
Endometrial thickness after miscarriage management

A randomized trial of management:
- 491 women received misoprostol vaginally
- 161 women received suction curettage
- Endometrium assessed at 2 weeks
  - Endometrial thickness measured

Misoprostol vs Surgical for EPF: EMT on Day 15

- Difference 1.9 mm [95% CI 0.9, 3.0]

By Treatment Group

Endometrial Thickness on Day 15

- Misoprostol
- Surgical Evacuation
EMT at Day 3 after Misoprostol

Day 3 Endometrial Thickness by Outcome

Difference 5.9 mm [95% CI 2.5, 9.4]

No Uterine Evacuation

Uterine Evacuation Performed
Day 3 Endometrial Thickness as a Predictor of Need for D&C

Area under curve = 0.7334  se(area) = 0.0657
# Day 3 Ultrasound Results by EMT Threshold

<table>
<thead>
<tr>
<th>EMT Threshold (mm)</th>
<th>Day 3</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>88.2%</td>
<td>25.6%</td>
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<tr>
<td>15</td>
<td>15</td>
<td>58.8%</td>
<td>60.8%</td>
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<tr>
<td>20</td>
<td>20</td>
<td>47.1%</td>
<td>82.8%</td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td>11.8%</td>
<td>98.3%</td>
</tr>
<tr>
<td>Gest. Sac</td>
<td>30</td>
<td>80.0%</td>
<td>86.4%</td>
</tr>
</tbody>
</table>
Clinical Judgment over Ultrasound: Treat the patient, not the ultrasound
Conclusions

• Ultrasound is good at confirming absence of a continuing pregnancy
• EMT is a poor predictor of the need for uterine aspiration
• EMT is not substantially different 2 weeks after uterine aspiration compared to misoprostol for EPF at 2 weeks
• Patients should be managed based on clinical presentation
Thank You